

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) An optical pickup device for recording and/or reproducing information in an optical information recording medium, comprising:
 - a light source to emit light flux having a central wavelength not ~~longer~~ more than 500 nm;
 - a converging optical system to converge the light flux emitted from the light source onto an information recording surface of the optical information recording medium;
 - and
 - an optical detector to detect light flux reflected from the information recording surface of the optical information recording medium or the light flux passing through the information recording surface of the optical information recording medium;
 - wherein the converging optical system or the optical detector comprises at least one optical element and the optical element comprises at least one optical surface having a center-line mean roughness Ra of ~~5 nm or less~~ not more than 5 nm.
2. (Currently Amended) The optical pickup device of claim 1, wherein the optical element has the optical surfaces having a center-line mean roughness Ra of ~~5 nm or less~~ not more than 5 nm on both side surfaces thereof.

3. (Currently Amended) The optical pickup device of claim 1, wherein the optical surface of the optical element having a center-line mean roughness Ra of ~~5 nm or less~~ not more than 5 nm is an aspherical surface.

4. (Currently Amended) The optical pickup device of claim 2, wherein each of the both side surfaces of the optical element having a center-line mean roughness Ra of ~~5 nm or less~~ not more than 5 nm is an aspherical surface.

5. (Original) The optical pickup device of claim 1, wherein the optical element is made of a resin material.

6. (Original) The optical pickup device of claim 1, wherein the optical element is made of a glass material.

7. (Currently Amended) The optical pickup device of claim 1, wherein at least one surface of the optical surface of the optical element has a reflectance of ~~5%~~ not more than 5% for light having a wavelength of 400 nm.

8. (Currently Amended) The optical pickup device of claim 1, wherein at least one surface of the optical surface of the optical element has a reflectance of ~~3%~~ not more than 3% for light having at least a wavelength of 300 nm to 500 nm.

9. (Cancelled).

10. (Original) The optical pickup device of claim 1, wherein the optical element is an objective lens of the converging optical system.

11. (Original) The optical pickup device of claim 1, wherein the optical element is a collimator lens of the converging optical system.

12. (Original) The optical pickup device of claim 1, wherein the optical element is an optical element for a sensor of the optical detector.

13. (Currently Amended) An optical element, comprising:
at least one optical surface;
wherein the optical surface has a center-line mean roughness Ra of 5 nm or less
not more than 5 nm, and

wherein at least one surface of the optical surface has a reflectance not more ✓
than 3% for light having at least a wavelength of 300 nm to 500 nm.

14. (Currently Amended) The optical element of claim 13, wherein the optical element has the optical surfaces having a center-line mean roughness Ra of 5 nm or less not more than 5 nm on both side surfaces thereof.

15. (Currently Amended) The optical element of claim 13, wherein the optical surface of the optical element having a center-line mean roughness Ra of 5 nm or less not more than 5 nm is an aspherical surface.

16. (Currently Amended) The optical element of claim 14, wherein each of the both side surfaces of the optical element having a center-line mean roughness Ra of 5 nm or less not more than 5 nm is an aspherical surface.

17. (Original) The optical element of claim 13, wherein the optical element is made of a resin material.

18. (Original) The optical element of claim 13, wherein the optical element is made of a glass material.

19 through 21. (Cancelled).

22. (Original) The optical element of claim 13, wherein the optical element is an objective lens.

23. (Original) The optical element of claim 13, wherein the optical element is a collimator lens.

24. (Original) The optical element of claim 13, wherein the optical element is an optical element for a sensor.

25. (Currently Amended) An optical information recording and/or reproducing apparatus for recording and/or reproducing information in an optical information recording medium, comprising:

an optical pickup device comprising

a light source to emit light flux having a central wavelength not longer more than 500 nm;

a converging optical system to converge the light flux emitted from the light source onto an information recording surface of the optical information recording medium;

and

an optical detector to detect light flux reflected from the optical information recording medium or the light flux passing through the optical information recording medium;

wherein the converging optical system or the optical detector comprises at least one optical element and the optical element comprises at least one optical surface having a center-line mean roughness Ra of ~~5 nm or less~~ not more than 5 nm.

26. (Currently Amended) A molding die for an optical element; comprising:

a molding surface,

wherein the molding surface comprises at least one aspherical surface having a center-line mean roughness Ra of 5 nm or less not more than 5 nm.

27. (Cancelled).

28. (Currently Amended) A method of manufacturing a molding die for an optical element, comprising the steps of:

cutting a material of the molding die with a super precision lathe and a diamond tool; and

forming an optical surface transferring surface in the molding die;

wherein the optical surface transferring surface comprises at least one surface having a center-line mean roughness Ra of 5 nm or less not more than 5 nm.

29. (Currently Amended) The method of claim 28, wherein a tool roundness of the diamond tool is 30 nm or less not more than 30 nm.

30. (New) An optical element, comprising:

at least one optical surface;

wherein the optical surface has a center-line mean roughness Ra not more than 5 nm, and

at least one surface of the optical surface has a reflectance not more than 5% for light having a wavelength of 400 nm.